

VIRGINIA WILDLIFE

AUG. 1956



VOLUME XVII *Price 15 cents* NUMBER 8



Virginia Chamber of Commerce Photo by Flournoy

Pier fishing growing in popularity along Virginia's ocean front.

VIRGINIA WILDLIFE

Published by VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES, Richmond 13, Virginia
A Monthly Magazine Dedicated to the Conservation, Restoration, and Wise Use of Virginia's Wildlife and Related Natural Resources, and to the Betterment of Hunting and Fishing in Virginia

COMMONWEALTH OF VIRGINIA



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Cover

The screech owl is our only small owl (about 8 inches in height) with conspicuous "horns" or ear tufts. There are two distinct color phases, one brown and the other gray.

Photo by Leonard Lee Rue III

PUBLICATION OFFICE: Commission of Game and Inland Fisheries, 7 North Second Street, Richmond 13, Virginia

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SUBSCRIPTIONS: One Year, \$1.00; two years \$1.50; three years, \$2.00. Remittances by check or money order to be made payable to the Treasurer of Virginia. Local game wardens will accept subscriptions or they may be forwarded direct to Commission of Game and Inland Fisheries, 7 North Second Street, Richmond 13, Virginia.

VIRGINIA WILDLIFE is published monthly at Richmond 13, Virginia, by the Commission of Game and Inland Fisheries, 7 North Second Street. All magazine subscriptions, change of address notices, and inquiries should be sent to the Commission, P. O. Box 1642, Richmond, Virginia. The editorial office gratefully receives for publication news items, articles, photographs, and sketches, of good quality, and other materials which deal with the wise use and management and study of Virginia's inter-related, renewable resources: soils, water, forests and wildlife. Because of pressure of editorial duties, however, the Commission cannot be held responsible for unsolicited manuscripts and illustrative material. Since wildlife is a beneficiary of the work done by state and federal land-use agencies in Virginia, editorial policy provides for full recognition of their accomplishments and solicitations of their contributions. Credit is given on material published. Permission to reprint is granted provided proper credit is given the Virginia Commission of Game and Inland Fisheries and VIRGINIA WILDLIFE and proper clearances are made with authors, photographers, artists and publishers.

Second-class mail privileges authorized at Richmond, Va. Additional entry Baltimore, Md., July 1, 1956.

It's A Lifelong Challenge*

FIRST question: When was the last time you played basketball? Second question: When was the last time you went fishing?

We will wager that in nearly 100 percent of your answers fishing will get the nod. It stands to reason—when you get beyond the age where your muscles and companions fail to respond to such activities, you naturally turn to something more quiet and less strenuous. Fishing offers such a lifelong challenge—and at any degree of activity you may wish to pursue it.

At recent clinics held in Ohio and Michigan, a group, headed by Dr. Julian W. Smith, of Michigan State University, gathered to discuss how courses in fishing, hunting, camping, and general outdoor appreciation could be taught in schools. This group—the American Association for Health, Physical Education, and Recreation (A.A.H.P.E.R.)—plans to hold clinics in any state in which the educators show an interest in the program. In addition to Ohio and Michigan, Utah, Wyoming, Georgia, and New Hampshire have such clinics scheduled.

Nationwide, of the 28,000 secondary schools and 2,000 colleges surveyed, the returns leave little doubt of the interest in outdoor education. For example, 12 percent of the high schools and 25 percent of the colleges reporting had casting and/or shooting in their programs. More than 50 percent desired assistance in setting up similar programs. It was this interest in outdoor education and the urgent need for leadership training that gave birth to the A.A.H.P.E.R., in cooperation with the Associated Fishing Tackle Manufacturers and the Sporting Arms and Manufacturers Institute. Designed to help schools and colleges to achieve educational goals through outdoor activities, the projects will be concerned with the interpretation of outdoor education, leadership training, and the preparation of instructional materials. The aim is to estab-

lish outdoor education as an integral part of the school curriculum by featuring fishing, hunting, safety, camping, and conservation.

This program does not replace such competitive sports as football, baseball, and basketball. It merely supplements and broadens the physical education curriculum, giving a wider choice of electives. Formerly, the physical education program was concerned with four things: exercise, group activities, corrective exercises, and (unimportantly) leisure-time activities. A.A.H.P.E.R.'s program would emphasize activities that would help a person enjoy his spare time in later years.

In the past decades, interest in the outdoors has grown phenomenally. At the pace of modern-day living, getting in the outdoors "away from it all" seems to balance tensions. Too, advocates of the program point out that the reduced work week is just ahead. We will have more leisure time than ever.

It is a mistake to think that the program is for males only. At the Ohio clinic, the question of female participation in the program was discussed. Admittedly, years ago any woman who fished was regarded as an oddity, but all recent surveys show a marked increase in feminine interest in fishing and other outdoor activities. The husband-wife fishing team is an ever-increasing sight along our waterways.

The A.A.H.P.E.R. program is still in its formative stages. Let's fervently hope that educators will be far-sighted enough to recognize this program for what it's worth, and that our sons and daughters receive a lasting and rewarding appreciation of fishing, camping, boating, conservation, and all outdoor activities through outdoor education.

*(An editorial reprinted from the July, 1956, issue of the *Fisherman*)

Love of the Land

Protection of our forests from fire is basic conservation. Planless burning is one of the great destroyers of our wealth. When the woods burn, the wilderness economy becomes bankrupt. Wildlife disappears. Water once held on spongy, plant-carpeted land rushes off. Erosion starts. Nature's balance is upset; and all living creatures suffer. These wounds can impoverish a region and damage an entire nation. For in final analysis, all life depends on the health of land and the abundance of its resources.

Love of the land has gained increasing support in America over the years. We realize more and more our compact with the unborn generations that we leave to them something more than depleted resources.

But there are many violators of that compact. Every careless camper who leaves his fire smoldering violates it. Every smoker who tosses a cigarette into the bush violates it. So do the hill people of the South who start fires purposely. The problem is a national one, not a regional one. Every section of the nation knows of these abuses; and thousands of acres are lost every year because of them.

Neither laws nor their enforcement will completely solve the basic problem. There remains the task of educating young and old to the enormity of the evil. This requires a sense of personal discipline and understanding on the part of all our people, instilled through an unceasing educational program. We already apply the good neighbor policy to the people around us. We must educate each generation to apply that same concept to our relationship with the land.

—William O. Douglas, Associate Justice, United States Supreme Court



U. S. Forest Service Photo

A watershed is all the area that sheds water into a given stream, lake, pond, or other drainage point. Large watersheds may include towns, cities, highways, factories and other man-made structures.

SPOTLIGHT ON THE WATERSHED

By PHILIP BARSKE*

HOW many of us would deliberately take off on a hunting or fishing trip with only a rod or a few shotgun shells? Frankly, with a little stretch of the imagination, that's the way we're attacking our fish and game problems—we have been doing it on a piecemeal basis, a dab here, a dab there. We have had some success, it is true, but we have also had many failures because we have been playing a lone game. Fishermen have been interested in water only for fish, hunters in plants and land only insofar as they would produce game. We can't keep kidding ourselves that our special interest is the most important one or the most important conservation problem of the day—we are only reaping the interest that comes from good land and water management.

The tie-up of soil, water, plants, fish and game is known to each of us. Let the mind wander back to that pond or trout stream of your pre-shaving days—was it over-fishing or over-gunning that ruined our favorite stream or game cover? No sir! It was rarely over-fishing or over-gunning that was responsible for the deterioration of the fields and streams.

How about the stream flow? How many times during the past few summers could you walk dry shod over your favorite riffs of by-gone days—back when a level-wind reel was the hottest thing on the market, and the

streams and ponds often had a natural color to the water? Does that compare to the chocolate brown of our present silt-laden waters or to the reds and greens of some waters as they flow rainbow hued from our mill wastes?

Today a fly caster could, if he wanted practice, cover all of the waters of my worming days, because the bank cover is gone. This bank cover has given way to paved roads, roadside improvement, housing developments, or overgrazing by farm animals. The hunting conditions are pretty much the same.

Everybody and every interest is involved in fish, game and other resource management: the foresters, the soil people, the many water groups, civic officials and the fish and game enthusiasts, to mention only a few. The idea of our natural resources depending on each other and requiring a combined effort of different interests is catching on.

A watershed is all the area that sheds water into a given stream, lake, pond, or other drainage point. An old fish back bone and its feather bones could roughly illustrate what we mean by a watershed—the feather bones are the tributary streams and the backbone is the major drainage of the watershed.

The greater part of most watersheds is made up of farming, grazing, or forest lands; most large watersheds contain towns or cities and usually include considerable areas devoted to roads, highways, railroads, factories, mines and many other man-made structures.

*Philip Barske is the eastern field representative of the Wildlife Management Institute.

Furthermore, the plant life that grows on the land forms an integral part of a watershed—the trees, grass, crop lands, and all other plants. And the animals that live on the plants and in the water—domestic animals, game, wildlife and other animal forms—all make up a part of the watershed.

Finally, we have the most important part of the watershed: the people who live in it and, manage or mismanage all of the resources. It is these people who are responsible for a good program of watershed management.

A watershed program is concerned primarily with the fate of the raindrop. Our lives, the growth and health of communities, our prosperity, recreation and wildlife, all logically depend on an adequate and steady supply of good clean usable water. The watershed should be the collector of moisture in the form of rain or snow; the soil is the greatest potential natural storage reservoir we have. Starting with conservation practices, on the hills and valleys, that hold back wasteful run-off and soil loss, multiple purpose conservation programs can be planned to yield such benefits as erosion control, reforestation, stream stabilization, flood reduction, recharging and maintenance of underground water levels, protection of farm, city, and industrial water supplies and, importation to recreational interests, better waters for fishing.

Of the various conservation measures involved in watershed work, could we say that many of these projects could honestly be tackled for fishing or hunting improvements alone? Certainly not!

The close to home approach encourages cooperative action among several agencies and groups and a willingness to assume local responsibility for we still prefer the home grounds when we have work or money to put up.

Who is there to do this work? The state Fish and Game agency, the Soil Conservation Districts, watershed associations, conservancy districts, farm organizations, business groups, industry, sportsmen groups, and "that group" common to the average American community, waiting to get enthusiastic about the home area.

Everyone can be satisfied if his or her interest is number one on the list, and individually there are a few exceptions. We are all fishermen, hunters, sportsmen, and sometimes conservationists, but still our basic interest comes first. The management of fish and game on a watershed basis means that at last we are beginning to think along the lines of nature. For the past many years we all bought a fishing license, and then, to be honest with ourselves, we expected fish everywhere and in creel limits. With our dollar, most fish and game departments did what was popular or what was demanded. Do you know of any fish and game department that could or did go to the John Smith property and plan for a complete fish and game program? No sir, there is no fish and game department that could tackle a job like this alone; but with all the interests working together the job is not impossible. A program of this sort means better land conditions, better water conditions, better fishing and hunting opportunities and (something we some-

times forget) better relations with the land owners.

Watershed management is not a new idea, but in the past few years it has received considerable publicity—Federal, State agencies and private groups have been promoting and pushing the idea. In 1954 Congressional recognition really spurred the program. The pilot watersheds program has established ways, means and funds for over 50 small demonstration watersheds to be set up in 27 states. Following this program, late in 1954, the Hope-Aiken Act established the ways and means of spreading the small watershed program over the nation.

It hasn't been federal action alone that spurred the watershed idea. Many privately organized watershed associations were the pioneers in this field and today we have over 500 organized watershed groups! This number is far from adequate. It is estimated that there are at least 11,000 small watersheds in need of a complete conservation program.

The watershed idea of resource management puts the whole team in action—technical agencies, landowners, city dwellers and sportsmen. We all have a share and we all have responsibility. To gather up the loose ends and to keep things going we are still going to rely heavily upon our state agencies and some of the progressive ones have taken up the challenge and are doing something about it.

Michigan is a known leader in the field of watershed management. Their entire program on the 100,000 acre Rifle River watershed is based on the principle that "the quality of a trout stream is determined by the condition of a watershed."

In the early days the Rifle River Watershed was blanketed with hardwoods and evergreen forests. Waters tended to run cool, clear and evenly through shrub and tree lined banks. With the coming of the ax and plow



Photo by Verne Davison

In the past man has drained some areas that should not have been disturbed. A steadily decreasing underground water table has resulted partially from such practices.



Photo by Verne Davison

A good watershed program is based on wise land and water management. It is surprising how big a factor the management of water is in such a program.

the landscape soon changed and so did the stream and fishing conditions. Now the cooperative watershed program is attacking the cause of poor fishing where the fault really lies—that is in the cut-over forest lands, the eroding farm lands, the bare and crumbling stream banks and the ups and downs of stream flows. In other words, the Rifle River program is getting out of the stream and going up on the banks, into the branch streams and the headwaters to do a real job of trout water restoration. To further illustrate the harnessing of forces to do a real conservation job, a few of the active cooperating agencies might be listed other than the Michigan Conservation Department—chambers of Commerce, County Officers, Newspapers, The State University, The University, The Extension Service, County Agents, Water Resources Commission, U.S. Weather Bureau, U.S. Forest Service and



Water is the most immediate necessity to sustain life either plant or animal. Water is an important consideration in any conservation program.

the Geological Survey. At last the conservation agencies and the public are working as a team.

The spotlight on the watershed can be turned on many states. Wisconsin has really entered into the watershed program for its fish, game and forestry program. This state has about 13 active and going watershed programs and 45 more projects in the initiation or planning stage. This program is under the direction of a Supervisor of Watershed Management. In a recent Wisconsin publication, the philosophy of the watershed idea was well described and worth repeating: "Conservation can no longer be viewed as an independent, individual problem. It is a problem of society, in the framework of education, research, production, credit tax base and all the other ramifications of a great society—the problem is equally urban and rural."

"The approach must be American and on a community basis—all people working together for the common good; working as a group and not as individuals. Watershed management involves all aspects of the productive and protective uses of land and water in a valley or watershed. The watershed is a unit, a community of many facets, land, water, trees, shrubs, insects, fish, game, and human beings—all with multiple relationships and interrelationships."

The idea is catching on. Many other examples could be cited but the two states mentioned illustrate the ideas behind good watershed management.

Much of the watershed program will of necessity be state or organization sponsored but under the small watershed program of 1954 (Hope-Aiken) the opportunity was created for any local organized group to get a program started.

A real watershed program is based on good land and water management and it is surprising how big a factor the management of water is in such a program. Water as it drops on the ridge of a watershed becomes the blessing or curse of every landowner, sportsman and conservationist. The farmer wants it to give moisture to his grass and crops, but he doesn't want it in too large a dose or loaded with mud and pollution; the city and industrial needs require clean water and in regulated and steady amount; cities and towns want flood waters to stay away from their doors; sportsmen want water to supply living quarters for fish and game.

To get water in desired amounts and in a desirable condition is our number one goal. It may seem a long round-about way to tackle better fishing by re-foresting hill lands miles away or by tying down a farmer's soil on some corn land, but it's the real way. And it is also the way in which all people stand to gain, not just a few individuals.

Starting with the plan of controlling the raindrop after it falls, we progressively tackle problems that mean complete land use management as we work toward a goal of more and better cover conditions, controlled water, better water and increased hunting and fishing opportunity. The spotlight is on the watershed and it's our job to make it a real guide light!

Practice Ground for White Water Canoeists

By CHARLES E. PLANCK



Virginia Chamber of Commerce Photo by Flournoy
Great Falls on the Potomac. Not too much white water but enough
for good training and practice for the average canoeist.

WHITE water for canoeists—20 miles from Washington!

The idea sounded screwy to us, and we laughed at those who warned us in advance of our Memorial Day trip down the Potomac. "Sure," we said, like all novices. "Sure, there may be a few rapids, some riffles, rocks to get hung up on—but white water! That's what you see on calendars and in the color slides of more fortunate people who can go to Canada for vacation. But the Potomac, no."

So we drove to Brunswick on the Virginia side, put the canoe in the water with all our duffel and climbed in. Four in a 17-footer. Two sleeping bags, two blankets, a thermos full of steak, a big aluminum pan to cook it in, a bag of apples, a bag of oranges and assorted dehydrated camping eats, for the two-day trip down to Great Falls. It looked real professional from the shore there under the Brunswick Bridge, with all four of us decked out in borrowed Mae Wests.

Four feet out from the bank the Potomac current took hold and down the river we went, fairly fast while just floating, but really scooting along with a little paddling. And there were the first "rapids" just ahead. They appeared where a ridge of rock cropped up and marched across the river, making the brown-green water curl over it and tumble and boil a little on the downstream side. A mere riffle was new to us, but even novices have read adventure stories so we steered for the smooth, fast-flowing slick behind two disturbed parts of the riffle and sailed over easily with fast-growing confidence. Below the slick the water churned, but it was deep enough and we were past the rocks.

We reconnoitered a bit on the next riffle, chose the biggest slick and started toward it. I'll always maintain that a 14-year old boy in the bow of a canoe would much rather hit a rock than steer around it. The curiosity to see what will happen and to promote an emergency is just too much for him. Anyhow, we got athwart the Potomac with the fast waters of the slick broadside to the canoe, holding it firmly on the rocks. It took much paddling and pushing and heaving to get over that

second riffle.

In between riffles, we made soundings and found there were few places where a six-foot paddle wouldn't touch bottom. The Potomac seems to average about four feet in depth! Step out anywhere and stand there.

It's a beautiful river, really. Trees line the banks in most places but now and then there's a glimpse of farm land, and the sound of trains and cars is nearly always in the background. The current on these two days was steady and gratifying. The river was at a 3.5 stage, the weather bureau said, just about right for our purpose. A bit more water would have taxed our inexperienced brains and muscles. A bit less would have exposed many more rocks. But the wind was at our backs and the sun climbed up over Washington, burned our knees, shoulders and noses, and went down into the river above Harper's Ferry.

Saturday's rain was a big one, complete with lightning and thunder and hard-driving rain. We sat out the worst of it under the aqueduct that carries the canal over the Monocacy. That aqueduct leaks a little but not where we were sitting.

Finding a place to camp along the Potomac is not easy. There are a few sand islands which give dry surface—even after rains—and soft sleeping, with many banks of mud, slick as grease at the water's edge. Finally, we climbed a muddy incline to a cleared spot—fearing all the while it was the front yard of some inhospitable river man—made camp, ate supper and settled down for the night.

Our involuntary host appeared next morning shortly after breakfast and wondered why we hadn't come up to the house for a cup of coffee. You meet the nicest people on these outdoor jaunts.

The second morning was lake stuff. The Potomac piles up above Seneca Dam, stretches wide between its shores, and along here is populated with motor boats and skittering little racers. The current is less noticeable and progress seems slower. Thus, when a breeze picked up we hoisted an oar in front, hung a poncho over it

and held the corners out to each side. It made a lovely jib and a little steering by the stern man kept us going downstream at a good clip.

Noontime turned up a beautiful park on the Virginia side, a big flat plain with rich grass, picnic tables, some stones for a fireplace—and that pleasant breeze a-blowing. Then we headed down the stream for the white water.

Novices don't know a dam when they see one, from upstream. And Seneca was hidden, at least we never saw it. But an experienced canoeist had told us the river had cut a "channel" around the right of the dam and we could either carry over or go around sitting down. Naturally, being rookies, we chose the easy way. But if we had carried around the dam we never would have fallen in the Potomac, we never would have seen the white water, we never would have known how much fun two kids can have hung up on rocks in the middle of a rushing stream or plunging over slick rocks in water up to their armpits while nursing a canoe full of water and one giggling mother through "white water."

Facing that water at first, we became sober and sensible. We contemplated the first rapids from the shore and decided it was too much for us to tackle. No need to take chances. Let's be safe rather than sorry, etc. So we let the canoe down by rope over the heaving waters, feeling right proud of our judgment. Then we got in and headed for the next adventure.

That was the big tree—a sycamore that had fallen across the stream. At the bank it was a good six feet above the water and it met the water in midstream. The water was swirling under it, and passing beneath it in a canoe looked perfectly possible. We talked over our plan of action very fast as we approached. The current was edging toward the low end of the fallen tree and

there was nothing the stern paddler could do to change the course. It might have been possible to do a better job in the bow—but who knows? Chip, 14, ducked and got under. Patsy, 17, and her mother, sitting on the bottom of the canoe, got under and all the while the canoe was racing forward and veering left. By the time I got to the tree there wasn't room for me and the canoe between the water and the tree, so I laid back on the right gunwale and pushed the canoe down to save my face from a scraping by that tree. Under we went and the canoe filled with water. Patsy, Chip and I fell out and when I heaved up out of the depths, there was Carolyn, up to her belt in water, with blankets, thermos bottles and canoe paddles floating around her. Then the three of us inched the canoe down the rest of the rapid water.

"Cleopatra in her royal barge," said mama, displaying an amazing disregard for minor danger that would have scared her pink in prospect. It must have been that Mae West she had on.

Well, it wasn't really white water—not like the calendar pictures anyhow. But if you are looking for training or fun in canoeing through rapids or practice in quick and desperate paddling around sharp corners and bulging boulders, this "channel" around Seneca Dam is your dish.

As a matter of fact, there are several channels and you can take your choice. Make your decisions on land first, however, and don't pile four people and duffel into a 17-foot canoe for the trip. Use a 13-footer with only two paddlers in it. You should wear swim suits and, honestly, you can leave off the Mae Wests (even if you have to leave mama at home). You can always stand up against the current and grab at branches or boulders if you get

(Continued on page 20)



The Potomac River has some beautiful scenery. Canoeing along the shores offers fine recreation and can be relaxing to mind and body.

Photo by Harold M. Lambert

Right-of-Ways Management A Growing Problem

By

ALVIN R. GROVE



U. S. Forest Service Photo

Utility companies in the eastern United States will eventually be involved in the management of 10,000,000 acres of land along their various right-of-ways. This acreage offers an opportunity for planting low growing wildlife food plants, thus helping wildlife, and at the same time reduces maintenance costs.

IT HAS been estimated that as many as 10,000,000 acres of land, in eastern United States, will eventually be involved in the cleared right-of-ways of various utility companies.

The treatment and use of so much land must become the concern not only of the officials of the various utility companies involved but of everyone interested in the ecological, esthetic, and conservation problems created by this vast acreage of denuded land.

Obviously, it is necessary that the approach and the solution to the problem be a sensible one. Unrealistic schemes will play no part in the establishment of these cleared areas, or in their maintenance. Unquestionably, the most economical approach will be the one used by the utilities.

At the moment, the only practical method of clearing trees from a right-of-way is by hand.

However, the problem of maintaining such cleared areas is being met by the use of herbicides. And 2-4D, 2-4-5T, or combinations of these two are most important. Although they may be applied sometime during the first clearing process, their use is largely one of aiding in the maintenance of these cleared areas.

At the present time, there are two fundamental methods of applying the herbicides.

One is the blanket-spray technique, in which everything is sprayed and a 100-percent kill of all vegetation is sought. However, a second, and much more desirable, technique has been developed. It is the selective dormant basal-spray method. Here, the herbicide is sprayed only at the base of undesirable plant growth.

Quite obviously, greater skill and training are required in the selective dormant-spray method. Persons applying the herbicide must be able to distinguish between desirable and undesirable plant species. The immediate conclusion might be that the process necessarily would be much more expensive.

However, according to the advocates of this method of treatment, the cost figure is entirely comparable with that of the blanket-spray technique. In economic terms, little, if any, argument exists as to its practicability.

For instance, the blanket spray is applied when the vegetation is in leaf. At this time of the year, the physical difficulties of traversing the land are great. The selective basal spray, on the other hand, is applied after the leaves have fallen from the trees.

In the selective-spray method, there is an actual saving in herbicides, since all sprays are directed at the base of the growth, in the correct quantity. The blanket method of spraying obviously must depend on volume for adequate coverage.

The blanket method of spraying permits no selection. All vegetation present is sprayed. Certain plants, which might be desirable as feed for wildlife, must be eradicated.

(Editor's Note: ALVIN R. GROVE, JR., associate professor of botany at the Pennsylvania State College, following a survey in the Bald Eagle Forest Area of Pennsylvania for the purpose of studying right-of-ways management, offers the following summary of his findings. The field trip was made under the sponsorship of the Pennsylvania Game Commission. You should find his article written for *Outdoors Unlimited* both interesting and timely.)

cated along with the undesirable, since there is no means of separation.

On the other hand, the selective-spray method makes it possible to pick out only those species of plants that are undesirable. Those that might be of benefit to the cleared strip, as well as to wildlife, can be protected and maintained. It would seem that the establishment and future maintenance of any cleared area in eastern United States might be solved more efficiently if the ecology of the area is understood. There is no need to discuss this ecology in detail. However, much of the area in question is a deciduous forest.

But the East has a "mixed-up" ecological picture, which cannot be covered in the same over-all terms applicable to much of the Midwest and West. Local ecological influences of soil, slope and light might be much more important than annual mean temperatures or rainfall.

The degree of success in handling one cleared area is no guarantee that an identical procedure is applicable in another region.

However, notwithstanding the tremendous influence of rather local conditions, it makes sense to work with the ecological conditions, which determine the type vegetation existent at any one place, rather than against them.

A method in opposition to the naturally existing conditions might produce a very startling effect at first, which could be mistaken for progress. But, in the long run, the maintenance problem is likely to become very expensive and annoying.

There is a good deal of evidence to indicate that a ground cover, or understory, of grass—especially, through forested areas—does not normally occur. Rather, there is likely to be an understory of shrubs when sufficient light permits their development.

Actually, this natural shrub-type plant growth exists as an understory because it can flourish under these ecological conditions. And it strongly resists the invasion of other kinds of plants, which are not a part of its own association.

A ground cover of grass, which follows the blanket spray, will only be a temporary cover. With the destruction of the desirable shrub growth through blanket spraying, the grass covered right-of-way will soon be invaded by tree seedlings.

The selective basal-spray technique is an attempt to work with the natural conditions and to aid in the establishment of a brush, or shrub, type growth. The plants utilized in the establishment of this type ground cover are obviously those already present in the area.

An examination of a portion of the right-of-way of the Pennsylvania Power and Light Company utility line in the Bald Eagle Forest of Pennsylvania, indicated that basal spraying is working successfully in the maintenance of this cleared area.

Following the removal of the tree species by cutting, the selective dormant basal spray was applied to the remaining stumps and to the sprout growth. Those plants that were known to be low-growers were not touched. They were left to take over and resist the invasion, in the future, of the undesirable tree species.

This did not, of course, guarantee that the shrubs present would be particularly desirable for wildlife. As a matter of fact, the area examined was not rich in food. However, if desirable wildlife plants are present in an area, at the time the treatment is carried out, it is to be expected that they would also occur in the remaining vegetation.

In the area examined, no sprout growth of oak, maple, or sassafras was seen. Blueberries, sweet fern, pokeberry and several grasses were present. All of these were sufficiently low in their growth type so that they did not interfere with a so-called clean right-of-way.

As a matter of fact, it is possible that right-of-ways do not need to be so clean as previously thought. The bare, or grass covered, condition may be rather pleasing for some to look at. But it is relatively more expensive to maintain. It will be subject to greater invasion by tree species in the future. The cost of maintenance is likely to increase. And there is serious doubt as to the value of grass as wildlife food.

Inasmuch as tree species are absent from shrub growth, the maintenance problem is practically non-existent. The naturally low-growing shrubs, in the area examined, have formed nearly a solid ground cover, which other types of plants find difficult to invade. It is obvious that, since such cover maintains itself, at no expense, there is little need to do anything about it.

The use of the selective basal-spray method is also desirable because at no time is the ground cover completely removed. There is less opportunity for either water or wind erosion. And it does not create the feeling among casual onlookers that here is the mass, wanton destruction of our forests.

Unquestionably, from the viewpoint of conservation, the selective basal dormant spray is to be preferred to the blanket spray.

Moreover, if an area can be managed with the selective spray technique to meet the demands of the utility companies, at a price no higher than and, perhaps, not as high as an area treated with blanket spray, then commercially it should be much more desirable.

If the appearance of right-of-ways can be improved, if more food for wildlife can be created, if the living plant decreases the fire danger, if there is less erosion, if the natural competition of growing shrubs is as successful, or more so, at no cost to the utilities, in preventing the reinvasion of tree species, then there is little argument as to the sensible choice which should be made.

The Woodchuck—Summer Fair Game

By RAY STANN and PAUL CARDINAL
National Rifle Association

THIS is the time of the year when many hunters unlimber and degrease their pet rifles for an occasional shot at the elusive woodchuck. He comes out early in the spring when the grass is green and the air is fresh and the rifleman gets the urge to try out his pet gun while seasons are closed for deer and other legal game.

Woodchuck hunting should not be underrated. It requires the greatest of skill. Shots are normally taken over unknown and frequently long ranges which demands the best of any shooter. Al Barr, of the technical division of the National Rifle Association, a noted national authority on groundhog hunting, has studied the habits of the cagey little animal and for years has hunted them with great success. Barr points out that since shots at groundhogs are normally taken at unknown ranges, the hunter must have a rifle using a cartridge of extremely flat trajectory. The .220 Swift is outstanding, says Barr. There are a number of wildcat loads giving similar ballistics to the .220 but in factory loads there is nothing better than the Swift.

The .220 Swift gives fine accuracy and the trajectory is as flat as you can get over regular hunting ranges—even up to 400 yards. The .220 Swift can be zeroed on aim at 200 yards and be less than 1.5 inches high at 100, 6 inches low at 300 and about 19.5 inches low at 400 yards. Accuracy will be around one minute of angle or less, meaning one inch at 100 yards, two inches at 200 yards, etc. That is the kind of accuracy one needs in order to hit a chuck with only his nose and head peeping out of a den at unknown distances. Woodchuck hunting is more of a specialized game than small-bore target

shooting. Of course different equipment is used but the groundhog hunter must hold well, estimate wind drift and, in addition, judge distance.

Besides being a test of rifles, ammunition, and sighting equipment, woodchuck hunting supplies the thrill of finding your chuck. For this purpose a good pair of binoculars (preferably 6 to 8 power) is almost as im-

portant as the rifle and a good target-type scope on the gun. In many localities woodchucks are not found in every field, though it may appear to be good groundhog country. The animals are, in a sense, lazy and they live near where they eat. A good well-drained hillside with a few projecting boulders is usually an ideal locality, yet one may drive for miles through the countryside before finding a "chuck colony." Once the locality is found it is up to the hunter with the aid of good binoculars to carefully and cautiously scan the countryside looking for any outstanding hump or roll in the ground which may conceal a chuck den. Then the idea is to wait until the hog makes his appearance and to shoot straight and fast.

This is the time of the year to think about woodchucks. They come early in the spring but the best season to hunt them is after May 30.

Anyone interested in woodchuck hunting should approach it from the angle of a challenge and not with the idea of shooting everything in sight. With that idea in mind the .22 high-velocity cartridges are the best. They shoot a light bullet at high velocity with a minimum of ricochet, which break up readily on impact. There are plenty of .25- and .30-caliber rifles used for this type of hunting but the safest and best is a high-velocity .22.



VIRGINIA WILDLIFE

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

FIRST CONSERVATION WORKSHOP SUCCESSFUL. The three weeks' conservation course at V.P.I. this summer, the first of its kind ever to be offered, was received with enthusiasm by the 29 High School and Grammar School teachers who attended it. Dr. Walter Newman, president of V.P.I., and Dowell Howard, state superintendent of Public Instruction, welcomed with short speeches the teacher-students on opening day. Closing day was highlighted by a picnic on the shores of the college pond. In between were hours of intensive study, lectures, field trips, and a startlingly rigorous written exam. . . The Commission of Game and Inland Fisheries was instrumental in inaugurating this newest conservation education effort; and also assisted substantially both in supplying materials and in actual instruction. . . Industrial and private organizations provided \$100 scholarships totalling \$2500 which were distributed to 25 of the 29 attending teachers.

MAYBE BAMBI HAS A MOTHER. Although small fawns are irresistably appealing they must be resisted, says Chester F. Phelps, chief of the game division of the Commission of Game and Inland Fisheries. "What people never seem to realize is that the mother may be right there hiding in the woods," Phelps says, "and she is much better equipped to take care of her attractive youngster than people are. All wild animals are better off in their natural habitats, and likely to die or harm people if taken home and made into pets. Besides, it is against the law to hold wild animals, and a fine of between \$10 and \$50 plus imprisonment may be imposed on the violator of this law!"

UTILITY CORPORATION ILLUSTRATES RIGHT WAY TO TREAT RIGHT-OF-WAYS. A highly worthwhile conservation project is being undertaken by the Transcontinental Pipeline Corporation which is now seeding its entire wooded right-of-ways from the James River south to the North Carolina border, according to C. H. Shaffer, one of the commission's game technicians. To date 60 miles of wooded right-of-ways, 100 feet wide, have been planted, and there is now a green carpet of grasses and legumes running the entire length of Buckingham County. Not only does this strip provide an excellent fire break and access road, but it also helps prevent soil erosion by slowing down water run-off. In addition, it furnishes cover for indigenous wildlife species such as turkey, quail, rabbits etc.

COMMISSION SHOWS BOY SCOUTS. A pilot summer camp conservation program with Camp Shawondasee, the Robert E. Lee Council's largest camp, is now in full swing. Once a week a member of the commission's education division staff conducts special conservation show-me trips, directs discussion sessions with camp leaders, and puts on an evening lecture and film program before the entire camp. According to J. J. Shomon, chief of the education division, this is a step forward toward a better working relationship with the boy scouts, and is one more example of the commission's interest in long range conservation education.

ACCESS ROADS TO BE CONSTRUCTED. The Commission expects soon to let a contract for the construction of its first access road to the James River in Powhatan County to provide the public with a right-of-way to fishing and waterfowl hunting, according to Chester F. Phelps, chief of the game division. The 1956 General Assembly provided capital outlay from the Game Protection Fund for a number of access roads to be constructed in hunting and fishing areas heretofore inaccessible to the public because of being cut off by privately owned property.



Swimming is one of the most important activities in any organized camp program. A youngster usually learns to swim in a short period of time if instruction and encouragement are offered. Emphasis should be on safety.



A boat or canoe is excellent for transporting duffel and equipment. Boat safety is an important consideration as it might save your life.



For cold weather camping the Adirondack shelter offers a snug warm camp. There are a number of these shelters along Virginia's Skyline Drive and in the national forests.



There is something fascinating about the night and its outdoor noises. The moment the fire has turned

POINTERS

Camping can be a period of pleasant living out of doors at the seashore. There are many types of camps; day camps, long-term camps, two months long professional summer camps.

Here are nine points to consider (there may be others).

More families than ever before are turning to the outdoors. Proper planning can make the difference between pleasant, relaxing



Be sure you have a supply of pure water for your camp. If you are in doubt, take your water with you. Or you can sterilize the water you encounter by boiling it before using.



Game Commission Photo by Kesteloo

...the embers of a camp fire will live in the thoughts of these boys long after the food has turned to ashes.

ON CAMPING

Whether it be in a forest, by a lake, or stream, or by the big over-night hike set ups, and well-organized one week to

...to) when you are contemplating a camping trip.

...of doors for wholesome, healthful recreation. Proper enjoyment and an uncomfortable tiring experience.

U. S. Forest Service Photos unless noted



For a long stay in camp good wholesome food is necessary. Luxuries such as folding chairs, covered cooking area, portable ice chest and a bottled gas stove are pleasant additions to any camp.



Erect your tent on an area that drains well. Firm anchors and sturdy tent poles are important in case of rain and storm.



Handicraft is usually an important part of the program in organized camps. Nature lore and conservation are interesting and growing in popularity in recent years.



Here is a good example of what not to do. This tent was erected in a low area behind a sand dune. An unusually high tide swamped the tent and all of the camping equipment.



Game Commission Photos by Kesteloo

Heavy fishing pressure, lack of fertility, and slow fish growth are all reasons why we have come to depend heavily on our hatcheries for trout production in Virginia.

A Biologist Looks at the Virginia Trout Program

By JACK HOFFMAN
Virginia Fisheries Biologist

CONSERVATIVE estimates place the number of Virginia trout fishermen at 100,000 and a general survey of licenses shows that this figure is increasing by three to six percent each year. To supply the demand for catchable fish and to keep pace with this rising fishing pressure, the Commission of Game and Inland Fisheries, together with the U. S. Forest Service, has been forced to increase its restocking operations appreciably. This past year, for example, the Commission planted 385,000 two-year-old brook and rainbow trout and the Forest Service added another 100,000 yearlings to give Virginia trout anglers a resource second to none in the east. Yet one week after opening day the 150 trout streams, which only hours before were lined elbow to elbow with fishermen, remain practically deserted. Why?

For clues as to why a half-million trout give Virginians only a week of trout fishing, we must go to the streams themselves and see what happens when a stream suddenly gets an overload of planted fish. By knowing what happens, we can also better understand why the wild fish make up such a small portion of the total take and why the wild fish which are occasionally taken are so small a part of the average creel.

First, when large numbers of trout are stocked in a stream an unnatural condition is created and a serious food shortage is at once apparent. Most Virginia waters at best are waters of low fertility—low food content—and thus provide just enough food for the wild trout present. When suddenly great masses of trout are released into these waters, you have a situation comparable to a herd of cattle turned loose into an already lean pasture grazed by a few calves and yearlings. Result: hunger for everyone. The nursery trout, long accustomed to regular feeding and a liberal diet of fish and liver, clean up the available food quickly with the result they and their small wild cousins have virtually nothing to eat.

Starvation does several things to stocked trout. It makes for loss in body vigor and muscle tone, factors which subject fish to the dangers of predation. A healthy, well-nourished fish can better escape raccoons and kingfishes than can a feeble fish. Starved trout, too, are more easily taken by poachers and while the factor present is social rather than biological, it nevertheless affects the situation. Wardens know for a fact that great concentrations of hungry trout are almost irresistible to poachers. Lastly, and most important, when opening day

comes and an abundance of food is suddenly brought to a stream, it's suicidal to the trout. Starved, weak, they will strike anything that comes along, and so, they're caught out pronto.

Equally important as lack of food is the added problem of shortage of suitable cover. This is not so apparent in the early spring months when the streams are full but in late spring and summer when the streams are low and crystal clear it is clearly evident. While small, native trout may find refuge, the large hatchery trout are often exposed to predators. This condition is magnified with the stocking of large, two-year-old trout, fish that are held over the extra year at the insistence of fishermen. While we have no figures as yet from Virginia streams, workers in other states have shown that losses of stocked trout because of predation, poaching, and migration are often considerable. Such losses, of course, can be reduced to almost negligible proportions by careful management but this type of activity has yet to be expanded in Virginia waters.

Nature, as personified by a trout stream or a farmer's pasture, is responsive to any interference by man. The trout stream reacts to the influx of stocked trout much in the same manner as a farmer's pasture reacts to overstocking by farm animals. Both attempt, by devious methods, to return to a "balanced" condition. In a trout stream, overstocked populations are reduced by predation, migration, or by fishermen until the fish population is in balance with the food and cover.

In dealing with put and take trout, we can be sure of one thing: that all of the trout stocked in excess of the carrying capacity will quickly disappear. Prior to opening day this may be due to predation or to poaching or to flood waters, or to all three. Those fish that do escape, however, are promptly caught soon after the season opens. The net result is that the time and money spent in stocking the nearly half-million trout soon goes by the board. Certainly the trout season is less than one week in duration for the majority of Virginia trout fishermen and this is to be appalled. Maybe this short



In dealing with put-and-take trout, we can be sure that all of the trout stocked in excess of the carrying capacity will quickly disappear. A majority of stocked trout are promptly caught soon after the season opens.



Cover becomes critical in many Virginia trout streams during low summer flows. This factor becomes more dangerous as the individual trout becomes larger.

type of trout fishing for large numbers of anglers is worth the effort but many people today are beginning to express their doubts.

In discussing the various reasons why wild fish contribute so little to our total catch and why they are so much smaller than hatchery fish, it is necessary to refer again to the matter of fertility. Fertility is as important in fish production as it is to the farmer in the production of his crops. Streams can be no more productive than the soils they drain, and the shale and sandstone soils peculiar to most Virginia mountain areas have little to contribute to trout production.

Today it is a well accepted fact that the growth rate of fish depends largely on the food supply. For small trout, this is almost entirely a matter of small aquatic organisms, the supply of which depends entirely on the fertility and temperature of the water. Low fertility of most of our trout waters, then, is the main reason why our wild trout, both the native brooks and the descendants of stocked rainbows, are so small. Occasionally a wild trout is taken that is 12 inches long, but this is rare. Most natives are much smaller—so small in fact that most fishermen are ashamed to keep them even though the law says *all must be kept toward the creel limit*.

Another factor that enters into the survival picture of both native and stocked fish is cover. Frequently streams look good and there seems to be an abundance of food. Some streams, too, may be ideally fed by springs and be in limestone drainage areas, yet the growth rate is poor. The wild fish continue small and the stocked fish remain stunted. The answer here in all probability is cover or shelter.

Cover, on the other hand, is not a static thing. It changes with the water and the seasons. Cover becomes critical during low summer flows. This factor, too, becomes more critical as the individual trout becomes larger. The larger a trout becomes, the more food he requires and the better cover he needs to escape his enemies.

(Continued on page 21)



U. S. Forest Service Photo

Wetlands, acre for acre, produce more wildlife than any other type of habitat. Wetlands and the wildlife they support are rapidly reaching the status of short supply in America.

THE NATIONAL WETLANDS PICTURE

By JAMES T. MCBROOM
*Coordinator of the Office of River Basin Studies,
U.S. Fish and Wildlife Service*

THE national wetlands picture is not a pretty one. It is scratched by ditches, marred by complacency, and blurred by the idea that shallow surface water is a liability until it is rushed off the land. Our standards of right and wrong allow a landowner to be punished for killing a duck out of season, but condone and even aid him for destroying, by drainage, the marsh without which the duck cannot live.

But the picture shows signs of getting a little brighter. There is a growing awareness that wetlands are more and more beginning to be recognized as useful parts of Nature's landscape, and more and more people are beginning to believe that they deserve a permanent status among our national resources.

It is easy to see why public awareness is so slow in getting established. Until very recently, marshes, swamps, and seasonally-flooded land were thought of as waste areas, to be "reclaimed" as rapidly as possible. The values of these areas for such purposes as waterfowl conservation, stabilization of runoff, replenishment of ground water, and protection against drought were hardly given a second thought. Instead, promoters of land drainage went about their merry way figuring out schemes to get

rich quick. We should consider the words of Kenney and McAtee who wrote in the 1938 Yearbook of Agriculture:

"... Under pioneer conditions, the rules for the treatment of wildlife are immediate exploitation of the useful and drastic destruction of the useless, and these rules tend to remain in effect long after the original motives are gone... the effort is to wrest every possible acre from nature and make it yield an income. There is no vision to see, there is no time to learn, that land units with their natural occupants, ... are productive entities that ... may be worth far more than anything man can put in their place and that once destroyed may never be reestablished."

We Americans seem not to appreciate the real value of a resource until that resource is in short supply. Wetlands and the wildlife they support are fast reaching such a condition; and, in many sections of the country, the supply is not only short but has practically disappeared. Witness the fate of the prairie potholes of northern Iowa, where 50 years ago millions of ducks were produced on hundreds of thousands of potholes. Now, only a few thousand ducks are produced on the few marsh areas that

are left.

Sometimes we think that selling the wildlife values of wetlands to the public should not be such a difficult job. Wetlands, acre for acre, produce more wildlife than other types of habitat. It is common knowledge that ducks, muskrats, and beaver use our marshes and swamps for family homes, for shelter, and for food. Less well known is the fact that many species of both small game and big game utilize wetlands to satisfy seasonal needs.

Our biologists working on the national wetlands inventory came up with a list of at least 50 fur and game species that utilize wetlands. Oddly enough, wooded swamps, although generally low in waterfowl value, are used by more species of resident game than any other type of wetland.

Although biologists have long sung the praises of wetlands, the idea that marshes and swamps have special intrinsic values—natural values—is just beginning to take hold with the general public. Hunters and fishermen enjoy these values in terms of the sporting thrills they receive, but equally important motivations are found in millions of others who insist that wetlands should be preserved for their intrinsic value alone.

All people need places to relax and enjoy themselves—places away from the pressures of today's high-speed living. The number of people who prefer a natural outdoor environment in which to do their relaxing probably exceeds any figure which has been mentioned to date by proponents of outdoor recreation.

For the statistical minds there are dollar values involved here, too. The business of supplying and supporting the needs of 33 million licensed sportsmen, and millions more of other outdoor enthusiasts, adds up to an industry whose worth has been estimated by some at nine to ten billion dollars annually to the commercial channels of America.

Yes, there are both tangible and intangible values in wildlife resources. Even though there is no exact figure to show what proportion of our wildlife is produced in or makes significant use of wetlands habitat, we know that many of the more popular forms of wildlife would be extinct, or at least drastically reduced in numbers, if wetlands were eliminated.

In the face of all these values, we, as a people, have squandered our wetland resources. Of this country's original 127 million acres of wetland, we know that at least 45 million acres have been completely destroyed by a combination of drainage, clearing and flood control. We are reasonably sure that these and other destructive forces have severely reduced the wildlife value of close to another 45 million acres. Thus, it appears that about 70 percent of our original wetlands have been virtually eliminated as wildlife habitat.

Although agricultural drainage and flood control have been the greatest destroyers of wetlands in the country as a whole, other factors—particularly in coastal marshes—have reduced significantly both the quantity and quality of wetlands useful to wildlife. Wildlife values have been drastically reduced by a system of intra-coastal ship

canals and connecting waterways to oil fields that have dried up thousands of acres of marshes, and by inlets cut to the Atlantic and the Gulf that permit the influx of salt water.

Both coastal marshes and interior wetlands are being dissected more and more by roads that drain or fill wet areas and induce further exploitation of adjacent areas. Wetlands give way to urban and industrial expansion, and they are filled in with everything from old car bodies to dredged sand to allow development of airports and beach properties. Some types of pollution also take their toll by killing aquatic vegetation. In the case of oil pollution, of course, waterfowl are directly harmed, often killed.

The Fish and Wildlife Service initiated a new program in 1950 which has as its objective the saving of privately owned wetlands, especially those of *particular* value to wildlife. The first phase of that program was a national wetland inventory, completed a year ago, in cooperation with all the state fish and game departments. The report on the inventory is now nearly ready for publication.

For the country as a whole, we inventoried nearly 9 million acres classified as high-value habitat for waterfowl and another 13.5 million acres as being moderate in value. On the lower half of the scale, 24 million and 28 million acres are rated low and negligible, respectively. The best waterfowl wetlands are the rarest, and the ones of poorest quality are the most abundant.

The next phase in the Service's effort to save wetlands is the wetlands preservation and development program. This program is still in the exploratory stage. We have



Our biologists working on the national wetlands inventory came up with a list of at least 50 fur and game species that utilize wetlands.

much to learn and many obstacles to overcome. But our attempts to work out cooperative programs with State game departments and private conservation groups, have met with enthusiastic response.

We in the Fish and Wildlife Service do not claim that our wetlands inventory and preservation programs have resulted in the initiation of all these action groups. We do feel, however, that our program combined with the National Wildlife Federation's 1955 theme of "Save America's Wetlands" has been helpful in establishing the growing belief that marshlands and swamps are essential parts of America's soundest land-use pattern.

A new and highly-important bright spot in the national wetlands and wildlife picture is the Soil Bank Program, which may well be the most significant milestone in wildlife conservation of our generation. Its objectives are to take land now growing surplus crops out of production and to put that and other farm land into soil-conserving vegetation. This alone is bound to be beneficial to wildlife, particularly upland game, which has suffered habitat losses from the so-called clean farming practices. But the program can do far more for wildlife if specific provision is incorporated in the plan to compensate farmers for restoring and retaining wetlands, and for other practices designed especially for wildlife coordination.

Wetland preservation and restoration is clearly in accord with the objectives of the Soil Bank plan. All farm drainage is to increase agricultural production either by making available new crop land or by increasing the production on existing crop land—both with the idea of getting more farm commodities to market. It seems clear and highly appropriate that potholes and other marshes can be and should be considered part of a farmer's Soil Bank deposit—with advantages to him and to the whole nation. Instead of the drainage incentives which have been responsible for the destruction of many millions of acres of prime wildlife-wetland habitat, the farmer at long last will have a suitable incentive not to

drain his wetlands.

Through the Soil Bank Plan, wildlife interests have a chance to join hands with America's farmers to paint a national wetlands picture beautiful to behold. A picture which will include revenue for the farmer, a suitable, secure home for wildlife; and a soul-satisfying abundance for the sportsmen of our country. It is the responsibility of wildlife conservationists to make sure we don't miss this golden opportunity.

WHITE WATER CANOEIST (Continued from page 9)
pushed around.

Reconnoiter from the shore, map out your course, and then down you go. Land on the Maryland side and carry back to the lake above the dam. Then do it all over, choosing another route down the rapids. It sounds like a great afternoon or day of fun and any beginner should go home that night much more skilled in fast water and far less bruised than a first-time skier. Then, if you ever get into a situation like that on the calendars, you can make like an expert.

Below the dam and on down to Great Falls there are many riffles—some of them pretty snappy—and islands, giving a wide choice of channels to follow. The current here is fairly swift and it slows up only quite close to the dam at Great Falls. The falls roar and warn you from pretty far upstream, and there's no special danger. The river is full of canoes from the rental station on the Virginia side, and the weird paddling you see tells you you're not quite the amateur some people are.

We were novices right to the end, however, landing like dopes on the Maryland side in the midst of a record crowd of spic and span picnickers, who had a special treat rubbering at our soaked blankets and muddy equipment. Besides, we had to carry the canoe and wet duffel 200 yards to get it on top of the car that came for us.

Fishing

By J. M. HUNT

"When your neighbors pester you,
Er your business goes askew;
When you're glum and tired of life,
Er have trouble with your wife,
Don't just sit around and fret,
Go a'fishing and forget!
"When the drought has spoiled your crop
And you're just about to flop;
Er the rain has ruin't your hay,
Er your wife's Ma comes to stay,
Don't just sit around and fret,
Go a'fishing and forget!
"Find FLUVANNA RURITAN LAKE
Where there's perch and bass to take
Take your hook and line and pole
Mighty soon your cares will fold,
Don't just sit around and fret,
Go a'fishing and forget!"

(EDITOR'S NOTE: The above poem was written by the poet laureate of Fluvanna County specially for the dedication ceremonies of Ruritan Lake, June 19, 1956.)



Unpolluted constant flowing streams are a must for fish and fishing. The thoughtless drainage of marshes and swamps has helped lower our diminishing underground water table; the result being dry stream beds that have never been dry before.

Another case to be considered is that we do have a few, large limestone streams where both food and cover exist and yet most of the wild trout are still small. Here we must remember that such streams are readily accessible, are heavily stocked and *heavily fished*. Good streams that are accessible by automobile receive a fishing pressure far in excess of anything dreamed of a few years ago. The fishing pressure is continued on these streams after the smaller "rougher" streams are abandoned for the season. Another unfortunate factor is that most of our larger streams occur at lower altitude where higher water temperatures are encountered during hot, dry summers.

Limited growth rate data in Virginia trout indicates that few wild trout reach their fourth year. This applies to both the brook and rainbow. This short life span coupled with a slow growth rate rules out the chance of having many large wild trout or "natives" in our streams. Small trout are fairly abundant in the headwaters of many of our streams where their size, the rough terrain, the occasional rattlesnake, and the established custom of fishing for the larger hatchery trout make fishing for them less appealing to the average angler.

To the biologist studying the problem in Virginia, it seems that in the wild there may well be a natural selection of play that "breeds for small." The small trout find food and make use of their cover to elude their enemies and live to spawn more of their kind. But the larger, faster-growing individuals are caught by fishermen or lost to predators. If such a natural selection exists in the wild, it is the opposite of the artificial selection practiced in the hatcheries where the larger trout are continually selected for spawners as they mature first. The latter result is a larger, faster-growing strain of trout, a highly desirable characteristic from a hatchery management viewpoint, but at the same time it produces a fish that has "two strikes against him" when released in a stream. Size alone makes him that much more vulnerable.

So heavy fishing pressure, lack of fertility, slow growth are all reasons why we have come to depend heavily on our hatcheries for our trout production. Only in remote sections of North America can good trout fishing be found without hatchery fish. When heavy fishing pressure develops in now remote waters, they too will require hatchery trout if good fishing is to be maintained. In many sections of the North and West where there is abundant fertile water and a light fishing pressure, excellent fishing can be maintained by stocking a few fingerlings each year. In Virginia, however, with limited trout waters and waters of low fertility and heavy fishing pressure, we must depend on extensive hatchery-reared trout for the bulk of our trout fishing.

Since trout rearing and trout stocking form an important adjunct of the Virginia trout program and we have to have it, or, not have any trout fishing to speak of, it behooves us to make it pay the best dividends we know

how. Simply releasing large numbers of trout indiscriminately will not do it. Careful planning and management must be done. Trout should be stocked for the sole purpose of the pleasure they give to anglers and for no other reason. One of the outstanding trout management problems facing biologists and administrators today is how to provide a maximum return to the angler and yet increase the recreation provided. The theory is to provide more and better trout fishing for a longer time and for as many people as possible. How this may be done will be the subject of next month's final article.

August Offerings

August is an ideal month to explore the woods and fields for mushrooms. Warm days and damp nights following frequent rains make for the kind of weather that is sought by the mushroom hunter.

People who know mushrooms will have a gay time picking them, for they make delicious eating. In these days of inflated prices the food bill is a real problem. Those who can add to their family storehouse by picking the edible mushrooms are lucky indeed.

Believe it or not, it is possible to pick many pounds of delectable food any morning following a rain, by just knowing what mushrooms to pick. But that's the catch. To those who are unfamiliar with fungi, our advice is **LEAVE THEM ALONE**.

The best fungi to pick are the certain four—the puffballs, the morels, the sulphur shelf mushrooms, and the shaggymanes. All four are delicious, easily recognizable, and common. Space, however, does not permit us to describe them. Any good mushroom guide book will give you this information.

In studying mushrooms, the best advice we can give is, first go into the field with someone who really knows the fungi. Much can be learned from books, but only by direct observation will a person be able to positively identify this interesting tribe of plants.

Most people are afraid of mushrooms because a number are deadly. Yet the poisonous species can be identified with study. One common genus which is dangerous is the *Amanita* group. These can be identified by the presence of a ring around the stalk and a cup at the base of the stem. Extreme caution is a good thing, but it is silly to carry caution too far. Only by learning more about these colorful and interesting *Ascomycetes* — as botanists call them — will our fear of them vanish.

Do You Know . . . ?

The cuckoo, which places its eggs in the nests of other and smaller birds does this through necessity. The largest of the insectivorous birds, it requires a large quantity of food, keeping it constantly on the search. If it sat on its eggs, it could not obtain this food; if it left its eggs, they would become chilled.

Remington Establishes Wildlife Study and Demonstration Center

By HENRY P. DAVIS*

REMINGTON Arms Company, Inc., will establish a wildlife management study and demonstration center on a 2,970 acre tract of land near Chestertown on Maryland's Eastern Shore.

A Remington spokesman said the company has purchased, subject to the conveyance of good title, Glenmar Farms, site of one of the East's major wildlife sanctuaries, from the estate of the late Glenn L. Martin, Baltimore aircraft manufacturer.

Since 1910 Glenmar Farms has been identified as a key factor in the nation's effort to manage American wildlife. Thousands of waterfowl and other game birds have been raised each year at this sanctuary and released after banding. Although many of the birds remained in the east coast region, Glenmar released ducks have been reported from distant Canadian points.

The tract, which will be renamed "Remington Farms," comprises 23 farms with some 50 houses, barns, sheds and other buildings, as well as 14 fresh water ponds that serve as resting and feeding stations for as many as 50,000 waterfowl during the year's peak season.

The company said, "For many years Remington Arms Company has been a leading financial contributor to the national wildlife program for two reasons: first, it is the company's responsibility as a good corporate citizen to assure the preservation of a valuable natural resource, and second, it is simply sound business procedure for sporting arms manufacturers to help assure the nation's sportsmen a continuing wildlife crop.

However, the company believes it should not content itself with the mere contribution of funds alone. For this reason, we propose to use Remington Farms as a center that will contribute directly to the knowledge of conservationists, farmers, and others concerned with the maintenance of America's game crop. Our studies will be directed mainly toward land-use practices that will enable farmers to manage wildlife as an important and profitable addition to the crops they already produce."

According to Remington Arms, it will actively farm the tract's tillable soil and maintain cattle and dairy herds. From this, the company hopes to experience first-hand the farmer's problems and, in light of these, study new methods aimed at game crop production.

Said the Remington spokesman: "Growing competition for land use stresses the need for intelligent land management practices wherein crop production can be combined with effective game management practices. We hope to show that this can be done with no sacrifice to the land's crop productivity and with material increase to farm game populations."

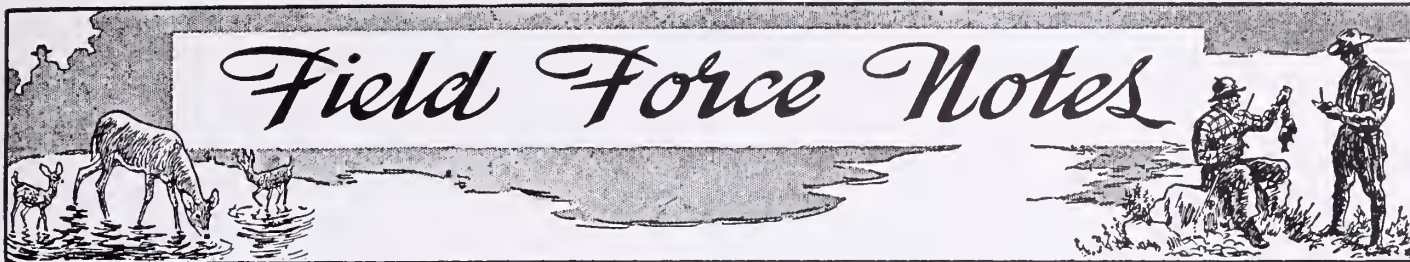
Remington indicated that once activities at the site have been organized, it will institute a series of field trips for visiting conservationists, wildlife authorities and educators. In addition, representatives of various news media, whose primary duties involve the coverage of sporting and wildlife developments, will have access to the property and to findings made in the company's studies.

Personnel selected for the center will be announced shortly.

*Mr. Davis is editor of *Remington News Letter*, official organ of the Remington Arms Company, Inc.

This We Believe

"Conservation is a way of life which is concerned with fundamental human needs. It relates the teachings of nature's laws to the ethics of social relationships and so promotes the wise use of human and natural resources for the greatest good of all. Focal determinants of conservation, then, are man's concern for man on the one hand and man's concern for nature on the other. Thus a courageous and creative citizenry is demanded if natural and human resources are to be utilized for the continued improvement of the democratic way of life." From *Conservation Education in the Community School Program*, published by The Department of Public Instruction, Lansing, Michigan.



Two New Biologists Join Staff

John B. Redd joined the Game Commission staff on July 1st as a game biologist in the game division. His graduate work at the Virginia Polytechnic Institute included a research project on the cottontail rabbit. In his new job farm game problems will occupy most of his time. His headquarters will be in Powhatan, Virginia, and his district will include a number of counties in the central section of the state.

Redd, a native of Virginia, was born in Alexandria and he attended the public schools in that city. He has a B.S. and M.S. degree in wildlife management from V.P.I. He is a veteran of the Army Signal Corps, and has a family which consists of a wife and three small sons.

On the same day Jack Gwynn also started working for the Game Commission as a game biologist. His special work is in turkey research which is an addition to the Commission's project, "Virginia's Upland Game Investigations." In the past this project dealt mainly with deer, but it is now being expanded to cover the popular — but often scarce — wild turkey.

A recent graduate in wildlife management from the University of Michigan, Jack was born in Shenandoah, Iowa. He served with the U. S. Navy during the last war, and is now all ready to settle down in the Charlottesville area with a new job and a new bride.

Uneducated Dogs in Danger

During the series of seven anti-rabies clinics recently held in Richmond 8,422 dogs were innoculated, Game Warden Julian Hill, who assisted with the innoculations, pointed out that there were an even larger number of dogs whose owners had not taken advantage of the free city clinic.

It is hoped that in the future more people will become aware of the aggressive battle the city is waging so that rabies may be completely eradicated from Richmond.

Botanist Massey Awarded Doctorate

Arthur Ballard Massey, who has been associated with V. P. I. as a teacher and research worker for the past 38 years and who has been a botanist for the Wildlife Unit at Blacksburg for the past 23 years, was awarded on June 4th the degree of Doctor of Science.



Dr. A. B. Massey, eminent botanist, scientist and teacher, is awarded an honorary Doctor of Science degree by Lynchburg College.

Dr. Massey has written numerous treatises on plants and flowers, particularly in this state, and is a member of the Botanical Society of America, the Society of Plant Taxonomists, the Ecological Society of America, the

Torrey Botanical Club, the Southern Appalachian Botanical Club and the Virginia Academy of Science. He has also been vice president of the Southern Appalachian Botanical Club and served as the associate editor of its publication, *Castanea*. Many of his articles have appeared in *Virginia Wildlife* and he has also been the expert consulted by this magazine on all articles pertaining to plant pathology, ecology and bacteriology.

Many successful botanists, game biologists and game commission personnel owe much of their early training to Dr. Massey. For he is a highly respected and gifted teacher as well as a scientist whose advice and counsel is constantly sought by botanical specialists from all over the country.

Born in Albermarle County in 1889, he earned his B.S. degree from North Carolina State College at the age of 20. Next he studied at the University of Florida, the University of Chicago, and the Virginia Polytechnic Institute where, in 1928, he was awarded his M.S. Chairman of the Virginia Academy's Committee on state flora, he is now working on a card index of all Virginia plants, planning a comprehensive publication on that subject.

Out of the Kitchen and Into the Trout Streams

These days instead of being weekend widows, more and more women are accompanying their husbands on fishing expeditions. It has been estimated that about 10% of the 400,000 fishing licenses (for freshwater angling) have been bought by or for women. And for every woman who fishes in freshwater there is at least one who fishes in salt water, which brings the estimated number of lady anglers in our state up to nearly 100,000!



Bright Bunnies

The midnight reveler encountering neon-lighted rabbits in the Blacksburg area need not take the pledge or see a psychiatrist. The rabbits are real and their ears *are* illuminated.

As part of a study now being carried on by Burd McGinnes, a graduate student at the Virginia Cooperative Wildlife Research Unit, tags pasted with luminous tape are fastened to the ears of rabbits in order to make them identifiable at night. For example, males are marked in red, and females with silver. This allows the rabbit workers to check on the movements, feeding areas, and mating habits of the rabbits at night when they are most active.

The end objective is to discover how the rabbit population can be increased for the benefit of the hunting public. For in Virginia the cottontail is one of the most popular game animals and there are many sportsmen who firmly believe that there's no recreation that can beat a day afield with the beagles.



The Virginia Department of Highways' scrap luminous road sign tape is put to good use to mark rabbits for scientific studies.

Hunting and Fishing License Sales Hit New High

According to the U. S. Fish and Wildlife Service, licenses purchased for sport fishing and wild game hunting in the United States hit a new high during the fiscal year ending June 30, 1955. Total of licenses purchased was 33,046,361 or an increase of 392,162 over the previous year.

Eighty-seven million dollars was spent for all types of hunting and fishing licenses, permits, tags, trout stamps, and Federal duck stamps.

Virginia ranked 13th among the states in total number of fishing licenses and permits sold but only 24th in total cost to anglers for licenses issued. Similarly, we were 8th in total hunting licenses and permits sold but 16th in total cost to the hunters for these licenses.

Rare Colorful Snake

A large rainbow snake was found and caught by Phillip Gage of Williamsburg and Dan Cantner, Special Services Officer of the Commission of Game and Inland Fisheries, in Halfway Creek last month. Little is known about the rainbow snake (*abastor erythrogrammus*) partly because it is a burrowing and secretive snake, and partly also because of its limited distribution. It is one of the most brilliantly colored snakes of North America, and the specimen caught by Mr. Gage and Mr. Cantner was in excellent condition and extremely glossy.

It was in the act of eating an eel when found and caught, so some of its feeding habits are known. Now it has been donated to the Biology Department of William and Mary College at Williamsburg.

Deodorant for Fido

Now there is a remedy for that acutely unpleasant condition resulting from a dog's unexpected encounter

with a skunk. According to satisfied dog-owners who have used it, it is more effective than water, soap, perfume or anything else. This new antidote has been tested by Dr. Henry Mosby, professor of wildlife conservation at V. P. I., and is nothing in the world but the application of tomato juice or tomato catsup to the contaminated pooch. Somewhat startling to the neighbors, he says, but highly successful.



Allen McDonald displays a 6 lb. 14 oz. largemouth bass taken at White Horse Rock, Clark County, Virginia.

Big Bass, Six Pounds Fourteen Ounces

A twenty-three inch largemouth bass weighing 6 lbs. and 14 ounces was caught this spring at White Horse Rock, Clarke County, by Mr. Allen McDonald of Boyce, Virginia. According to Game Warden Blake S. Denney, it was the largest fish ever caught in this section of Virginia.

Fluvanna's Ruritan Lake Now Open

Fluvanna County's Ruritan Lake, the latest public fishing pond constructed by the Commission of Game and Inland Fisheries, was officially dedicated with appropriate ceremonies and a large crowd of interested guests June 19th. A picnic supper

served on the shores of the brand new lake was followed by a speech by I. T. Quinn, the Commission's executive director and the guest of honor at the occasion.

Next day, when the pond was open to the public for fishing for the first time, so many eager anglers turned out that all the boats were gone by daybreak! The pond covers 70 acres, and was constructed under the direction of G. W. Buller, chief of the Commission's fish division. The program of constructing public fishing ponds was inaugurated by Governor Battle; and this latest one, Ruritan Lake, is the 6th in a prospective group of 8. The 5 which have already been built and which are now very much in use are: Lake Gordon in Mecklenburg County, Lake Burton in Pittsylvania County, Lake Connor in Halifax County, Lake Brittle in Fauquier County and the Brunswick County pond.

Small Fry Catch 350 Small Trout!

Three hundred and fifty smallish trout were caught by approximately 350 smallish people at the 5th annual fishing rodeo held at Lakewood pond, near Roanoke, and sponsored by the Blue Ridge Game and Fish Association. The bait most frequently used



Ebony room is at a premium at Lakewood pond, Roanoke, as 3,000 youngsters try their luck in the 5th annual Blue Ridge Game and Fish Association's fish rodeo.

by the pint-sized anglers was worms; but the 1,000 trout which had been stocked in the pond for the occasion were also tempted by dough balls, cheese, liver and salamanders.

The turnout this year was 3,000 almost double last year's turnout. Many prizes were handed out, a good time was had by all, and the rodeo was termed by officials of the Roanoke sportsmen's group the most successful yet.

Douse That Cigarette

Most people realize that they should not toss cigarettes out car windows or drop them along the way as they stroll along, but few realize specifically how such actions could start fires. For example, a fire was started in Cambridge, Ohio, when a bird picked a lighted cigarette butt from the street and used it as part of the construction of his new nest. The nest was in the eaves of a two-story frame house, and the resultant fire caused considerable damage!

Resources Booklet Available Again

The booklet, "A Look at Virginia's Natural Resources" which is published by the Virginia Resource Use Educational Council in cooperation with the Virginia State Department of Education is once again available in single or quantity orders. The original 5,000 copies of this booklet, which is slanted at the schools at seventh grade level, were very quickly exhausted.

With a foreword by Dowell J. Howard, Superintendent of Public Instruction, the booklet has special chapters on Soil, Water, Forests, Wildlife, Fisheries and Minerals. Each chapter was prepared by the various resource agencies concerned and was approved by those agencies. The Commission of Game and Inland Fisheries, besides preparing its own wildlife chapter, also prepared the introductory first chapter entitled "What Is Conservation?". And J. J. Shomon, editor of *Virginia Wildlife*, did most of the editing.

The prices for the booklet, "A Look at Virginia's Natural Resources," are as follows:

| No. copies | Per copy |
|------------|-------------------------------------|
| | (Postage included. Pay in advance.) |
| 1 | \$.30 |
| 2-9 | .29 |
| 10-50 | .27 |
| 50-100 | .25 |
| | (Freight will be added to invoice) |
| 100-500 | .23 |
| 500-1000 | .21 |
| 1000 plus | .196 |

Any number of copies may be obtained by writing: Jay Dee Patton, P.O. Box 8745, Richmond 26, Virginia, Virginia Representative of the Monumental Printing Company of Baltimore.

N.R.A. Hunter Safety Graduates

The national Rifle Association Chapter at West Point proudly announces another list of graduates who have successfully completed the Hunter Safety course conducted by John W. Courtney, Jr. This newest group who have learned about hunting safety is made up of youngsters from 12 to 16 and includes: Mack H. Coffman, Patricia A. Tinsley, Victor W. Britton, James W. Rhine, Fred E. Brooks, Harry G. Anderson Jr., Billy G. Haigler and Franklin Darnell, Jr.

New Fossils

Since 1941 nearly a hundred new species of fossil birds have been found and tabulated in North America and in the West Indies. Bird fossils are relatively rare because their bones are so much more delicate than those of mammals or reptiles.

One of the most bizarre recent bird fossils, according to Dr. Alexander Wetmore, is one of a lizard-like creature with wings and saw teeth. Many of the species tabulated, however, represent species which are not yet extinct.

Tanker Oil Menaces Atlantic Sea Birds

The oil-laden bilge water spewed out by tankers and other large vessels in ports and close to shore kills the sea bird who alights in it. He either drowns or dies from exposure or starvation, because the oil causes his feathers to stick together and destroys their resistance to cold and water. An oil-soaked bird soon becomes unable to fly, and very susceptible to cold.

The sheen of the oily water attracts the birds, unfortunately, as does also the calmness. This bad situation exists in such ports as Boston and Galveston, the mouth of the Delaware River and off the coast of North Carolina.

The U. S. Army Engineers as well as the U. S. Fish and Wildlife Service are working on the situation; and their report is that with proper controls the menace can be removed.

Wildlife Questions and Answers

Ques.: Is there any truth to the old rule that a piece of brass or silver will turn black if cooked with a poisonous mushroom? Or that only edible mushrooms can be peeled?

Ans.: Both the tests you mention are false and extremely dangerous. Amanita, a deadly poisonous mushroom, peels easily. It should be emphasized that the only way to reliably identify a mushroom is by consulting an expert or a good field guide.

Ques.: In our section the mosquitos are plentiful this summer. I have heard that only the female mosquito does the biting. What is good for the itching of mosquito bites?

Ans.: You can be sure a mosquito bite is made by a female as her proboscis only is fitted for sucking blood. The male's mouth parts are so rudimentary that he cannot "bite" man.

Mosquito bites affect people in different ways. There are those who swell up at the first bite, and there are those lucky few who seem to be completely impervious. Ammonia, calamine lotion or alcohol applied to the bite will relieve the itching.

Ques.: I have heard that the porcupine can throw his quills at an enemy if it is molested. Is this possible?

Ans.: The quills of a porcupine are modified hairs that are heavy in proportion to the basal section by which they are attached to the skin so when the animal bristles and shakes himself some fall to the ground. They cannot be shot at people, however, nor are they poisonous, but the tip of each quill has a series of barbs that work deep into the flesh and cause festering unless promptly removed.

Ques.: I have a summer cottage in a pine grove overlooking the James River just west of Richmond. Recently several lizards have scurried across our porch and steps. Are they dangerous?

Ans.: Of the 3,000 species of lizards that are found in the world only two are known to have poisonous glands. The two are the bearded lizard (*Heloderma horridum*) found in Mexico and Central America; and the Gila monster (*Heloderma suspectum*) found in the

southwestern United States. All of Virginia's lizards are quite harmless and, as an avid consumer of insects, the lizard is useful and should be welcomed around homes, patios and gardens.

Ques.: What weed preventative measures would you suggest in building a new farm pond?

Ans.: Virtual weedproofing can be built in from the start, says James B. Trefethen in the July *Fisherman*. The majority of the pest species grow best in water less than two feet deep, and by digging a sharp drop-off to this depth close to shore, the spread of most water plants can be checked. This will also increase the storage capacity of the impoundment.

Ques.: Can you tell me how many different species of fish there are in the world?

Ans.: No doubt there are some species of fish that have yet to be classified, but the fish biologists tell us there are between 20,000 and 40,000 different species of fish in the world.

Ques.: What other animals besides the mammals are classed as warm-blooded animals?

Ans.: Among the members of the vast animal kingdom, only the birds share with the mammals the characteristic of warm blood which remains at a definite temperature, while the blood of all other animals varies with the temperature of their surroundings.

Ques.: Is it too early to predict the prospects for next year's waterfowl crop?

Ans.: No. Ducks Unlimited reports that another good year for waterfowl is in the making and that current prospects point to a waterfowl crop as good as that of 1955 which was rated outstanding.

Ques.: In Virginia do any of our native rats or mice store things like the pack rat of the west?

Ans.: One of the characteristic traits of our native Allegheny wood rat is to lug all sorts of rubbish to the den site. This booty may include bone scraps, leaves, bits of wood, tobacco tins, shotgun shells and the refuse from a camp site.

Ques.: I have heard my grandfather say that the mongoose is immune to the bite of a poisonous snake in a fight. Is this true?

Ans.: The mongoose is not immune to the venom of the deadly snakes it kills and eats. Keen vision and lightning agility enable it to evade their poison fangs.

Ques.: Are there any plants, other than poison ivy or poison oak, which will cause the skin to become irritated?

Ans.: There are around 100 plants that are known to cause dermatitis in susceptible persons.

Ques.: Recently, while on a hike with my family, we got caught in an electrical storm. Where is the safest place to be in a storm of this type?

Ans.: The safest place is inside a building, if a building is available. Avoid open places, high terrain, and do not stand under an isolated tree. Do not swim during an electrical storm. Water is a good conductor, and even though you may not be struck fatally, you may be stunned or paralyzed and thus drown.

Ques.: I have heard that an alcoholic beverage is a good antidote for snake bite. Is this true?

Ans.: Definitely not. Alcohol tends to make the heart beat faster and this in turn circulates the blood faster through the body. As a result of this accelerated circulation the poison will spread more quickly and do more damage.

Ques.: What is the largest common snapping turtle that has been recorded in this country?

Ans.: The record weight of a snapper is 86 lbs. The alligator snapper (*Macrochelys temminckii*) grows to approximately 150 lbs. weight under ideal circumstances.

Ques.: Is it true that a skunk is "harmless" if it is grabbed by the tail and hoisted into the air?

Ans.: There are reports that this method is far from foolproof. Many individuals who have tried this stunt have received a chilly reception upon returning to human society. The best policy is to leave this little animal alone as the spraying mechanism can function even when it is hoisted off the ground by the tail.

CONDENSED VIRGINIA FISH LAWS*

SEASON 1956

*License required to take any fresh-water fish

The following is not a complete transcript of the Virginia fish laws and for more details, consult the Virginia Game, Inland Fish and Dog Code of Virginia.

Game Fish means and includes brook, rainbow and brown trout, all of the sunfish family, including largemouth bass, smallmouth bass, and spotted bass, rock bass, bream, bluegill, crappie, walleyed pike or pike perch, white bass, wherever such fish are found in the waters of this State.

License required to take any fresh water fish.

Sunday Fishing—Prohibited in counties of Alleghany, Bath, Bland, Botetourt (except James River and Carvin's Cove), Craig, Giles (except Mountain Lake and New River), Highland, Rockbridge, Surry (only in Blackwater River and Cypress Swamp) and in Silver Lake in Rockingham County.

Augusta County: Written permission of landowner required to fish on Sunday.

Lawful Fishing—Fishing in the inland waters of this State shall be by angling with natural bait or artificial lures and a hook and line attached to a rod or pole, either with or without reel or by tight-line, during the open seasons, including first and last days thereof, within the daily creel, season and size limits prescribed. A hand landing net may be used to land fish legally hooked in all waters.

Unlawful—To sell any species of fish taken in inland waters, except under special permits provided by law; to fish through the ice in public inland waters; to buy or sell rock fish or striped bass taken in inland waters; to transport or carry for sale any minnows, hellgrammites and/or crayfish taken from the public inland waters of this state beyond the boundaries of this state, except persons licensed to engage in raising the same in their private ponds; to fish in waters stocked with trout except from 12 Noon May 1 to December 31, inclusive; to use live bait where trot lines permitted except during open bass season, or to use Baltimore minnows for bait in public impoundments.

LICENSES

| | |
|--|---------|
| County resident to hunt and fish | \$ 1.00 |
| State resident to fish only | 3.00 |
| Non-resident to fish only | 10.00 |
| City-resident to fish in waters within limits of city of residence | 1.00 |
| Non-resident interstate (North Carolina and Virginia) 3 consecutive days, to fish in Kerr Reservoir | 1.00 |
| Non-resident, 3 consecutive days to fish in public impounded waters statewide and in all public waters east of the Blue Ridge Mountains not stocked with trout | 1.50 |

National Forest Stamp—In addition to license, a National Forest Stamp is required to hunt, fish or trap in the George Washington and Jefferson National Forest, cost \$1.00.

Note: Licenses may be obtained from the clerks of the Circuit Courts of the counties or the Corporation Courts of the cities and other authorized agents. For further information, contact local Game Warden or write direct to the Commission of Game and Inland Fisheries, Richmond, Virginia.

License required to take any fresh water fish, except resident persons under sixteen years old, and land owners, their husbands or wives and their children, resident or non-resident, to fish within the boundaries of their own lands and inland waters, nor of their bona fide tenants, renters or lessees, when they reside on such land and have written permission of the landlord upon their person, and a guest of the owner of a private fish pond is not required to have a license to fish in such pond.

Any person commissioned or enlisted in the United States Army, Navy or Marines, while stationed or located in the county wherein the license is applied for, and any student regularly enrolled in any bona fide preparatory school, college or university in this State who presents a certificate of enrollment for the current year to the clerk of the county wherein such school, college or university is located, may purchase a county or state resident license.

OPEN SEASONS AND CREEL LIMITS

Continuous open season for taking any species of fish in all public impounded waters of the State, except trout.

Bass—East of Blue Ridge Mountains: Continuous open season, except in waters stocked with trout, then only from 12 Noon May 1 to December 31, inclusive.

West of Blue Ridge Mountains: Large and small-mouth, spotted and rock bass, June 20-April 30, and from New River and James River any time.

Exceptions—Alleghany, Augusta, Bath, Botetourt, Clarke, Frederick, Highland, Page, Rockbridge, Rockingham, Shenandoah and Warren Counties, rock bass (red-eye) and goggle-eye, continuous open season.

Continuous open season Statewide on white bass.

Creel Limits—Large and small-mouth black bass and spotted bass, 8 a day in the aggregate; 150 a season; white bass, 25 a day; rock bass (red-eye) 15 a day, 150 a season. All bass, regardless of size, may be kept and counted as part of daily creel.

Trout—From 12 Noon E.S.T., May 1 to one hour after sunset September 15, and from one hour before sunrise to one hour after sunset on intervening days.

Unlawful—to feed trout in streams stocked by the Commission of Game and Inland Fisheries, or to fish for trout with more than one hook attached to a single line in streams stocked with trout and such hook must be baited with natural or artificial bait.

This does not prohibit artificial lures with more than one hook.

Creel Limit—8 a day; size limit none, all to be kept as part of creel limit.

Pike—Walleyed or pike-perch, same as bass season east and west of Blue Ridge Mountains, and in public impoundments State wide (not stocked with trout), continuous open season.

Creel Limit—20 a day, size limit none. All to be kept as part of creel.

Crappie or Silver Perch, Bream and other Sunfish—Continuous open season; no size limit.

Creel Limit—Bream and other sunfish, 25 a day in the aggregate of all species, including crappie.

JOHN H. KERR RESERVOIR (VIRGINIA—NORTH CAROLINA) CONTINUOUS OPEN SEASON.

State resident fishing licenses and State non-resident fishing licenses and the 3 consecutive day special non-resident fishing licenses legally obtained from the Virginia Commission of Game and Inland Fisheries or State resident fishing permits and the non-resident fishing permits legally obtained from the North Carolina Wildlife Resources Commission, or the duly authorized representative of either, shall be honored and accepted as legal authority to fish only by means of rod and reel, or hook and line, or by casting, in the areas included within that portion of John H. Kerr Reservoir described in the following paragraph. Other fishing licenses, permits or privileges of either State will not be reciprocally honored.

Fishing in Kerr Reservoir—It shall be lawful to angle for any species of fish throughout the year in the waters of the John H. Kerr Reservoir, otherwise known as Buggs Island Reservoir, lying east of U. S. route 15 highway bridge near Clarksville, Virginia to the reservoir dam, including all tributary waters lying in Virginia which are accessible by boat from the main body of the reservoir, or from subimpoundments lying east of the said highway bridge, however, the game fish daily creel and size limits shall apply in the above named area as follows: jack (chain pickerel) 12, no size limit; walleye (pike-perch) 5, not less than 15 inches; black bass (consisting of Kentucky or spotted, small mouth and largemouth) 8 in the aggregate, not less than 10 inches; white bass 8, not less than 10 inches; striped bass 15, not less than 12 inches; rock bass (red-eye) 10, no size limit; pan fish, consisting of crappies, yellow perch, white perch, warmouth or open-mouth, redbreast or robin, bluegill or bream, and all other species of sunfish, perch, or pickerel not specifically listed above, in the aggregate 25, no size limit.

NATIONAL FORESTS

State Laws and regulations apply.

BIG LEVELS AREA

Conforms to general State Laws, except Coles Run closed to fishing.

SHERANDO LAKE

Fishing permitted outside swimming areas. Boats without motors allowed. Fishing permitted only between the hours of 8:00 A.M. and 8:00 P.M. Other-wise State laws and regulations apply.

SHENANDOAH NATIONAL PARK

Open to trout fishing only 12 Noon May 1 to one hour after sunset September 15 and from one hour before sunrise to one hour after sunset on intervening days. Natural bait is prohibited. Fishing only with artificial flies or hogs and lures with single hook. Creel limit 8 per day; none under 9 inches. Appropriate State fishing license required.

Park streams subject to closing in any emergency.

BACK BAY AND ITS TRIBUTARIES

Unlawful—to use air propelled boats for the purpose of hunting and fishing.

BLUE RIDGE PARKWAY

Conforms to State regulations except hours shall be from sunrise to sunset, and artificial bait only may be used.

CLAYTOR LAKE

Located in Pulaski County; boats available; year around fishing from Claytor Dam to Big Reed Island.

SOUTH HOLSTON IMPOUNDMENT

Continuous open season on all species.

Creel Limit—Black bass 8; white bass 20; crappie 20; bream and other sunfish 25 a day in the aggregate.

Highland County

Lawful—to take suckers in daytime only with a dull or noose November 1—February 1, both dates inclusive.

Shenandoah County

In Little Stony, Laurel Run, Passage and Cedar Creeks it shall be lawful to take trout with artificial lures only in Little Stony Creek above the Woodstock Water Supply Dam, in Laurel Run above the Markley Place, in Passage Creek above the bridge at the road leading to Smith Creek and in Cedar Creek at the National Forest boundary.

STATE PARKS AND FOREST LAKES

Seasons, creel limits and size limits same as general State law for fishing. (Subject to closure by Conservation Commission through trespass action.)

Bear Creek Lake—Cumberland County.

Lake Douthat—Bath County.

Fairy Stone Park Lake—Patrick County.

Goodwin Lake—Prince Edward County.

Holladay Lake—Buckingham County.

Hungry Mother Lake—Smyth County.

Prince Edward Lake—Prince Edward County.

Winston Lake—Cumberland County.

COMMISSION CONTROLLED PONDS

Boats, Regulating Use in Commission Ponds—There shall be no charge or fee of any kind to fish by angling from the banks of ponds owned or controlled by the Commission, except that all persons who fish therein by angling shall have required licenses. The concessionaire shall maintain an adequate number of boats, depending upon the acreage of the pond, the number to be approved by the Executive Director. These boats are to be kept in good repair by the concessionaire. For the use of boats the following regulations and charges: For a boat for the use of one person per day or fraction thereof not more than one dollar and fifty cents, and for each additional occupant of the boat a charge of not more than fifty cents shall be made.

Boats with motors, except electric motors, prohibited.

Creel and size limits: same as State regulations.

Open seasons same as general law, except fishing shall be one hour before sunrise to one hour after sunset only.

Airfield Pond—Sussex County.

Baxters Pond—Prince George County.

Brunswick County Pond—Brunswick County.

Chandlers Mill Pond—Westmoreland County.

Game Refuge Pond—Sussex County.

Lake Brittle—Fauquier County.

Lake Burton—Pittsylvania County.

Lake Conner—Halifax County.

Lake Gordon—Mecklenburg County.

Phoebe Pond—Appomattox County.

Powhatan Lake—Powhatan County.

Winborne Mill Pond—Southampton County.

Silver Lake Fishing—It shall be unlawful to fish in Silver Lake in Rockingham County on Sunday and, further, it shall be unlawful to fish in Silver Lake from January 1—April 30, inclusive; night fishing in Silver Lake is prohibited at all times. Except, however, it shall be lawful to gig and take by bow and arrow carp only from 7 A.M. to 10 P.M. Eastern Standard Time week days only, from May 10—August 10, inclusive. Town of Dayton. Boats available.

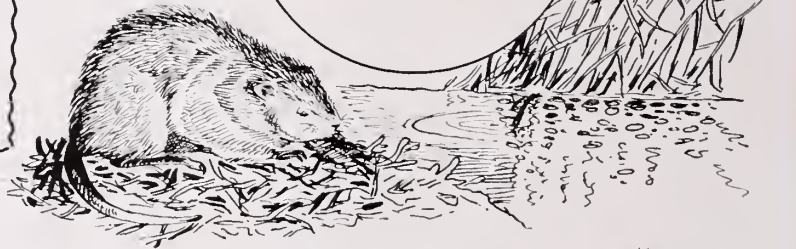
WATER



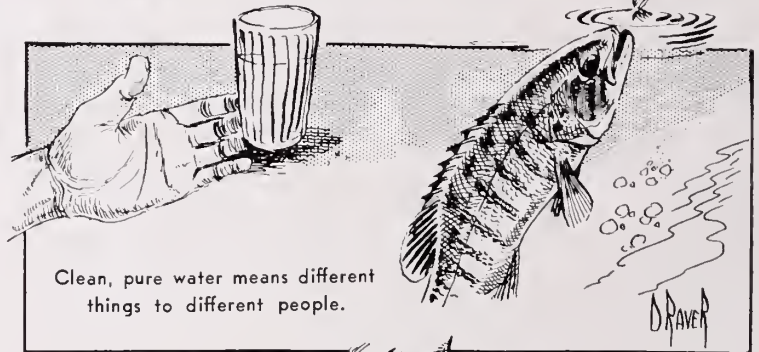
Water conservation goes
hand in hand with
wildlife management.



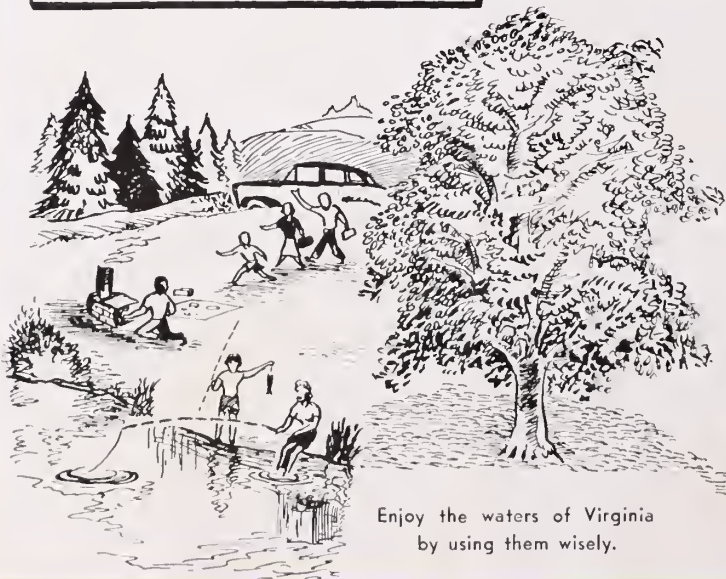
Water furnishes homes for
many wildlife species.



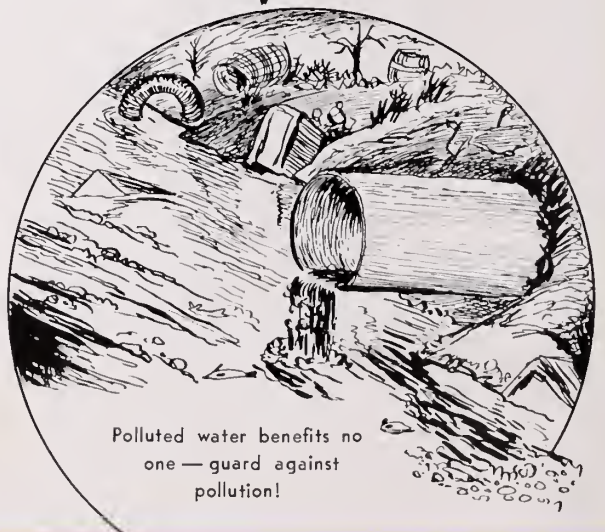
Cover vegetation shields the
soil from beating rains.



Clean, pure water means different
things to different people.



Enjoy the waters of Virginia
by using them wisely.



Polluted water benefits no
one — guard against
pollution!